REMARKS

Claims 1-8, 11-18 and 21-27 are pending in this application. Claims 1, 12 and 21 are the independent claims. Claims 21-27 stand allowed. By this Amendment, claims 1 and 12 are amended. No new matter is added.

I. Information Disclosure Statement:

Applicants again respectfully request acknowledgment of receipt and consideration of JP 2000 234941, a copy of which, along with an English language abstract, was submitted in the Information Disclosure Statement filed on October 19, 2005. Applicants note that the reference has been struck through in the PTO-Form 1449 returned to Applicants indicating that the reference has not been considered. As the reference was properly submitted, and a copy of the English language Abstract is available on the USPTO PAIR website, Applicants request consideration of the reference or a reason as to why the reference is not being considered.

II. Allowable Subject Matter:

Applicants appreciate the allowance of claims 21-27. Applicants submit that the remaining pending claims are in condition for allowance for the reasons discussed below.

III. Claim Rejections Under 35 U.S.C. §102:

Claims 1-3, 7, 8, 11-13, 16 and 17 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 3,549,897 to Blake. The rejection is respectfully traversed.

Blake fails to disclose each and every feature recited in the rejected claims. For example, Blake fails to disclose or suggest, an encoding apparatus that includes a detector adapted to read a first detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the first code track and a second detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the second code track; and a Field Programmable Gate Array (FPGA)/processor adapted to compensate for fluctuations in the code tracks, resulting from the disk being inaccurately mounted, by dynamically shifting at least one of said detector lines on the area array sensor being read, corresponding to a radial shift along a code track on said disk, such that a period length of

the imaged pattern along said at least one detector line remains constant; and numerically calculate an absolute position based on a light distribution of the imaged patterns of the incremental and absolute code tracks from the disk, as recited in independent claim 1, or the similar features of independent claim 12.

Blake relates to an electro-optical encoder that provides an output signal that indicates a rotational position of the shaft (col. 1, lines 5-8). In Blake, the encoder has a stationary disc 23 and a rotating disc 22. The disc 22 rotates relative to the disc 23 which remains fixed with reference to the light source 71 and the sensor support 24 (col. 4, lines 5-20; Fig. 2). The rotary disc 22 has concentric annular tracks T1-T15. Each track has a different number of periods and has two photosensors positioned such that their electrical outputs are 90° out of phase to produce a multi-bit signal unique to each angular position of the rotary disc.

Thus, Blake discloses reading recording signals being in different phases with respect to each other (due to the placement of the sensors on a separate cell board 24). In contrast, the rejected claims define an encoder that has a detector that reads a first detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the first code track and a second detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the second code track.

Moreover, in Blake there is no disclosure or suggestion of a FPGA/processor that compensates for fluctuations in the code tracks, resulting from the disk being inaccurately mounted, by dynamically shifting at least one of said detector lines on the area array sensor being read, corresponding to a radial shift along a code track on the disk, such that a period length of the imaged pattern along said at least one detector line remains constant.

Finally, Blake does not disclose that a FPGA/processor that is adapted to numerically calculate an absolute position based on light distribution of the imaged patterns of the incremental and absolute code tracks from the disk.

As Blake fails to disclose each of the features recited in the amended claims, withdrawal of the rejection is respectfully traversed.

Claims 1-4, 6, 12, 13, and 15 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 7,060,968 to Leviton. The rejection is respectfully traversed.

Leviton fails to disclose each and every feature recited in the rejected claims. For example, Leviton fails to disclose or suggest, an encoding apparatus that includes a detector adapted to read a first detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the first code track and a second detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the second code track; and a Field Programmable Gate Array (FPGA)/processor adapted to compensate for fluctuations in the code tracks, resulting from the disk being inaccurately mounted, by dynamically shifting at least one of said detector lines on the area array sensor being read, corresponding to a radial shift along a code track on said disk, such that a period length of the imaged pattern along said at least one detector line remains constant; and numerically calculate an absolute position based on a light distribution of the imaged patterns of the incremental and absolute code tracks from the disk, as recited in independent claim 1, or the similar features of independent claim 12.

Leviton relates to an optical encoder for determining a position of an object (col. 1, lines 30-35). The encoder includes a scale 5, with a pattern 9 and a plurality of periods, and a stationary light source 11. Light from the light source 11 is transmitted through the scale 5 toward an imaging lens17 that detects the image of the scale as pixels. A sensor bins charges from the rows of pixels into a single row. As a result of binning, the charges are vertically combined into a cell of a serial register. Subsequently, the serial register is loaded with combined charges of each column in the array image sensor. The binned signals are transferred to an analog/digital converter that digitizes the signal to create digital data and outputs the data to a memory.

Thus, Leviton fails to disclose or suggest a detector adapted to read a first detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the first code track, and read a second detector line corresponding to a row in the pixel matrix comprising the imaged pattern of the second code track, or an FPGA/processor adapted to compensate for fluctuations in the code tracks, resulting from the disk being inaccurately mounted, by dynamically shifting at least one of said detector lines on the area array sensor being read, corresponding to a radial shift along a code track on said disk, such

that a period length of the imaged pattern along said at least one detector line remains constant.

As Blake fails to disclose each of the features recited in the amended claims, withdrawal of the rejection is respectfully traversed.

IV. Claim Rejections Under 35 U.S.C. §103:

Claim 18 is rejected under 35 U.S.C. §103(a) as being unpatentable over Blake or US Patent 7,060,968 to Leviton in view of US Patent 4,714,339 to Lau, et al. (Lau); claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over Leviton; and claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over Blake or Leviton. The rejections are respectfully traversed.

Claims 18, 14 and 5 are allowable for their dependency on their respective base claim for the reasons discussed above, as well as for the additional features recited therein.

Further, Lau relates to an apparatus and a laser tracking system for locating a target in three or five dimensions. The system uses photosensors at the tracking point and the target point for determining alignment between a beam incident on a target mirror and a beam reflected from the target. Thus, Lau fails to relate in any way to an absolute optical encoder as recited in Blake or the optical encoder of Leviton. Thus, there is no suggestion or motivation to combine the references as proposed. Moreover, there would be reasonable expectation of success of combining the teachings of Lau with either the teachings of Blake or Leviton.

Finally, Lau fails to overcome the deficiencies of either Blake or Leviton and therefore, withdrawal of the rejections is respectfully requested.

CONCLUSION

In view of the above remarks and amendments, the Applicants respectfully submit that each of the pending objections and rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will

expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John A. Castellano, at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By _____ 34,317

John A. Castellano, Reg. No. 35,094
P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

JAC/JWF